

MONTANA FISH AND GAME DEPARTMENT
FISHERIES DIVISION
HELENA, MONTANA

JOB COMPLETION REPORT
INVESTIGATIONS PROJECT

STATE OF: Montana

PROJECT NO: F-28-R-1

JOB NO: I

NAME: Sun River Fisheries Study

TITLE: Inventory of Waters of the Sun
River Drainage Upstream from
Diversion Dam

PERIOD COVERED: May 1, 1960 to April 30, 1961

ABSTRACT:

Twenty-six streams and two mountain lakes were in the surveyed Sun River drainage during the summer of 1960. Stream flows, bottom samples and water quality data were collected on each stream. Fish populations present were sampled by shocking, pole and line and dynamite. An experimental plant of cutthroat trout was made in Rock Creek, a stream previously uninhabited by fish.

OBJECTIVES:

- . To determine the physical, chemical and biological characteristics of the waters of the Sun River drainage and obtain estimates of existing or potential fisherman use. This information will be used in forming a fish management plan for this area.

STREAM SURVEY:

Techniques Used:

Twenty-six streams of the Sun River drainage were surveyed during the summer of 1960. One to six sections were sampled on each stream. Fish populations were sampled by electro-fishing, pole and line and dynamite. Water samples were collected and analyzed at the State Board of Health Laboratory. Two square-foot bottom samples were collected at each station. Stream flow data were taken with the floating chip method.

Field data and other information collected on this project have been transferred to permanent file cards.

Findings:

The data obtained from these surveys is presented in Tables 1 and 2. Total dissolved solids ranged from 1 ppm at the headwaters of Rock Creek to 275 ppm at Circle Creek. It is generally considered that productivity is low in waters with less than 100 ppm total dissolved solids. A fair amount of desirable fish-food organisms were found at each station.

It is believed that before settlement by white men, the Sun River drainage above the falls, near the present Diversion Dam, was uninhabited by fish. At the time of this survey most of the streams studied contained trout. These apparently are descendants of hatchery fish planted from time to time. The trout found were generally small due to the comparatively low fertility, low water temperature, and short growing season.

Four of the streams were uninhabited by fish due to barriers near their mouths which prevented movement upstream. One of these streams (Rock Creek) was planted with 20,000 cutthroat trout on September 9, 1960.

Two 125-foot graduated nylon mesh gill nets were set in Renshaw Lake. Since no fish were captured it was assumed that the lake was uninhabited by fish. In July 1960 it was planted with 500 golden trout.

Bear Lake was found to have a good population of Yellowstone strain cutthroat trout. Fish populations were sampled by pole and line. Scale samples taken from fish collected will be used for age-growth determinations.

Table 1. Data collected at stream mouths in survey of the Sun River Drainage, Teton and Lewis and Clark Counties, Montana, 1960

| Stream | Date | Volume of flow | Turbidity | PH | Total dissolved solids |
|--------------------|----------|-------------------|-----------|-----|------------------------------|
| Fairview Creek | 6/30/60 | 23 | 1.2 | 8.1 | 140 |
| Wood Creek | 6/29/60 | 24 | .55 | 8.1 | 185 |
| Ford Creek | 7/ 1/60 | 21 | .21 | 7.8 | 180 |
| Ahorn Creek | 7/28/60 | 24 | .35 | 7.9 | 76 |
| Circle Creek | 7/ 8/60 | | .55 | 8.1 | 275 |
| Baldy Bear Creek | 7/24/60 | 4 | .43 | 8.0 | 37 |
| Bear Creek | 6/22/60 | 19 | 1.8 | 7.9 | 110 |
| Biggs Creek | 7/ 7/60 | 60 | .35 | 8.0 | 185 |
| Cabin Creek | 7/ 9/60 | | 3.6 | 8.0 | 265 |
| Gates Creek | 7/21/60 | 3.3 | .24 | 7.9 | 113 |
| Glenn Creek | 7/19/60 | 19 | 1.5 | 8.1 | 95 |
| Headquarters Creek | 10/ 6/60 | 6 | | | 180 |
| Hoadley Creek | 8/12/60 | 9 | | | 140 |
| Indian Creek | 7/28/60 | 3 | .35 | 7.5 | 91 |
| Lick Creek | 10/ 5/60 | 10 | .22 | 8.1 | 150 |
| Moose Creek | 7/19/60 | 48 | 3.5 | 8.1 | 107 |
| No. Fk. Sun River | 8/19/60 | 172 | .30 | 8.1 | 133 |
| Open Creek | 10/ 5/60 | 12 | .30 | 8.1 | 95 |
| Ray Creek | 10/ 6/60 | 10 | .32 | 8.1 | 170 |
| Red Shale Creek | 7/22/60 | 26 | .43 | 8.1 | 126 |
| Rock Creek | 8/17/60 | 33 | .17 | 7.8 | 94 |
| Route Creek | 10/ 6/60 | 20 | .16 | 8.0 | 140 |
| So. Fk. Sun River | 8/12/60 | 42* | 1.8 | 7.8 | 153 |
| Straight Creek | 6/29/60 | 151 | .35 | 7.9 | 120 |
| W. Fk. Sun River | 7/28/60 | 91 | .30 | 8.0 | 95 |
| Wrong Creek | 10/ 5/60 | 15 | .35 | 8.1 | 130 |

* Stream flow taken at mouth of Hoadley Creek.

Table 2. Summary of bottom fauna sampling in the Sun River Drainage, 1960

| Stream | No. Stations | X No. Sq. Ft. | Percent Composition | | | | |
|------------------------------|-----------------|------------------|---------------------|-------|-------|-------|-------|
| | | | Eph.* | Ple.* | Tri.* | Col.* | Dip.* |
| Fairview Creek | 1 | 84 | 78 | 8 | 7 | 1 | 6 |
| Wood Creek | 1 | 45 | 79 | 16 | 5 | | |
| Ford Creek | 1 | 80 | 62 | 18 | 18 | 1 | 1 |
| Ahorn Creek | 1 | 81 | 35 | 2 | 59 | | 4 |
| Circle Creek | 1 | 33 | 86 | 6 | 8 | | |
| Baldy Bear Creek | 1 | 62 | 72 | 18 | 5 | 4 | 1 |
| Bear Creek | 3 | 55 | 72 | 15 | 13 | | |
| Biggs Creek | 2 | 60 | 38 | 2 | 60 | | |
| Cabin Creek | 2 | 61 | 48 | 23 | 27 | 2 | |
| Gates Creek | 1 | 16 | 94 | | | | 6 |
| Glenn Creek | 1 | 67 | 78 | 17 | 4 | | 1 |
| Headquarters Creek | 1 | 76 | 34 | 54 | 12 | | |
| Hoadley Creek | 1 | 66 | 53 | 21 | 16 | | 10 |
| Indian Creek | 1 | 101 | 86 | 10 | 3 | | 1 |
| Lick Creek | 1 | 75 | 60 | 27 | 8 | 4 | 1 |
| Moose Creek | 3 | 50 | 81 | 7 | 9 | 2 | 1 |
| No. Fk. Sun River (lower) | 4 | 94 | 74 | 8 | 15 | 2 | 1 |
| No. Fk. Sun River (upper) | 2 | 53 | 78 | 11 | 8 | 1 | 2 |
| Open Creek | 1 | 41 | 61 | 27 | 4 | 5 | 3 |
| Ray Creek | 1 | 43 | 34 | 48 | 18 | | |
| Red Shale Creek | 1 | 57 | 77 | 2 | 18 | | 3 |
| Rock Creek | 3 | 69 | 61 | 20 | 15 | 1 | 3 |
| Route Creek | 1 | 18 | 34 | 46 | 11 | | 9 |
| So. Fk. Sun River | 4 | 75 | 69 | 8 | 19 | 1 | 3 |
| Straight Creek | 3 | 74 | 73 | 11 | 15 | | 1 |
| W. Fk. Sun River | 3 | 64 | 80 | 10 | 8 | 1 | 1 |
| Wrong Creek | 1 | 87 | 36 | 53 | 2 | 9 | |

* Eph. = Ephemeroptera
Ple. = Plecoptera

Tri. = Tricoptera
Col. = Coleoptera

Dip. = Diptera

Recommendations:

Approximately one-half of the more important trout waters in the upper Sun River drainage were surveyed in 1960. Approximately 20 streams and 8 lakes remain to be surveyed. This project should be continued until these surveys are completed and the project objectives are fulfilled. A follow-up survey should be made on Rock Creek to evaluate the cutthroat trout plant made in September 1960.

Data and Reports:

The original data and reports are in the fisheries office of the Montana Fish and Game Department District Headquarters at Great Falls, Montana.

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Date: June 16, 1961